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WA0FW-G

POWER METER SET

1. GENERAL. This procurement requires a power meter set capable of measuring RF signal power levels.

2. CLASSIFICATION. Type II, Class 5, Style EP, and Color R in accordance with MIL-T-28800 for shipboard applications.

3. MEASUREMENT REQUIREMENTS. The power meter set shall respond to the average power and indicate the RMS power of CW and pulsed RF signals throughout the power and frequency ranges and within the minimum accuracies specified below.

3.1 Power measurement range. -25 dBm (3 uW) to +35 dBm (3W) full scale.

3.2 Frequency range. 100 kHz to 4.2 GHz.

3.3 Power meter. An analog indicating meter with a taut-band movement and mirror-backed scales or a digital indicating meter that has at least 4 ½ digits of resolution, an analog peaking meter, and the capability of averaging up to 128 measurements.

3.3.1 Power meter stability. The power meter shall drift no more than ±1.5% of full scale from zero set on the most sensitive range irrespective of the power sensor configuration, within 5 minutes of zero set in a non-averaging mode of operation.

3.3.2 Zero set. When automatic zeroing is not a function of the instrument, the power meter shall be provided with a control that permits zero adjustment.

3.3.3 Power reference. The power meter shall be provided with an internal power reference for adjusting the instrument to match the sensitivity of multiple power sensors. The power reference shall be 1 mW ±1.2% for one year throughout the specified temperature range.

3.3.4 Calibration factor control. An operator control that permits instrument compensation for the calibration factor of each power sensor configuration shall be provided.

3.3.5 Recorder output. The power meter shall be provided with a recorder-compatible output linearly proportional to the indicated power on each range.

3.3.6 Instrumentation Accuracy. ±1% of full scale on all ranges.

3.4 Power sensor.

3.4.1 Impedance. 50 ohms, nominal.

3.4.1.1 Maximum SWR. 1.6:1 from 100 to 300 kHz and 1.3:1 from 300 kHz to 4.2 GHz.

3.4.2 Overload protection. The power sensor shall be capable of withstanding the maximum power inputs specified in table I.

TABLE I. Maximum Power Inputs

Sensor Power Range	Maximum Power Input
Up to 100 mW	300 mW average 15W peak 30 W-us pulse energy
100 mW to 3W	3.5W average 100W peak 100 W-us pulse energy

3.4.2.1 Overload indication. The meter shall indicate an overrange condition when the rms power level exceeds the operating range of the sensor.

3.4.3 Interconnecting cable length. 1.5 meters (5 ft) minimum.

3.4.4 Calibration factor graph. The power sensors shall be provided with a graph of calibration factor versus frequency mounted on the power sensor housing. The graph shall be compatible with the control specified in 3.3.4.

3.4.5 Calibration factor uncertainty (RSS). ±2.0% from 100 kHz to 4.0 GHz.

3.4.6 RF connector types. Type N(m).

3.5 Pulsed RF measurement requirements. All sensors shall respond to the average power of pulsed RF signals with the following pulse parameters:

a. Minimum pulse width: 5 us.

b. Duty cycle range: 0.1% to 100%.

c. Pulse repetition frequency range: 30 Hz to 500 kHz.

d. Peak power level not more than 20 dB above the continuous wave (cw) measurement upper limit of the sensors.

e. RMS power levels between the upper cw power limit of thermocouple sensors and within 5 dB of the appropriate lower measurement limit of the sensors.

4. GENERAL REQUIREMENTS.

4.1 Power source. MIL-T-28800 nominal power source requirements are invoked. Maximum power consumption: 25W.

4.2 Weight. 15 kg (33 lb) maximum.

4.3 Digital interface. A digital interface is required in accordance with MIL-T-28800.

4.4 Lithium batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.

4.5 Transit case. The Style P transit case shall provide protection for all components of the power measuring set.